

Serial No. 10/753,000

PATENT
Docket No. 02-0611**AMENDMENTS TO THE CLAIMS**

Claim 26 (Currently amended): A fastening system for securing a plurality of workpieces together in a fastened joint in a plurality of application having different load requirements, the fastening system comprising:

a first pin and a second pin;

each of the pins having an elongated shank and terminating at one end in an enlarged head and at its opposite end in a grooved portion comprising a plurality of circumferentially extending lock grooves and crests, the lock groove and crest geometry of the pins engaging a first collar or a second collar to fasten together the workpieces in the plurality of applications having different load requirements wherein the lock grooves of the first pin are of longest width required for the first collar of lower strength in a shear application and the lock grooves of the second pin are of the longest width required for the second collar of greater strength in a tension application, and the crests of the pins are of the longest width required for the second collar of greater strength in the tension application, wherein the first collar and the second collar are of different strengths and different materials and the lock groove width for the second pin differs from the lock groove width for the first pin by no more than 10%, wherein the applications are selected from the group consisting of shear, shear/tension, tension, shear composite, shear tension composite and tension composite applications; and
wherein either the first collar or second collar can be attached to the first pin or the second pin.

Claim 27 (Currently Amended): The fastening system pin of Claim 26 wherein the first collar has a shear strength of about 64% of the shear strength of the second collar.

Claim 28 (Currently Amended): The fastening system pin of Claim 26 wherein the first collar is made of an aluminum alloy and the second collar is made of titanium alloy.

Claim 29 (Currently Amended): The fastening system pin of Claim 26 wherein the lock grooves are overpacked in the range of 17% to 25%.

Serial No. 10/753,000

PATENT
Docket No. 02-0611

Claim 30 (Currently Amended): The fastening system pin of Claim 26 wherein the workpieces are made of metal composites or combinations thereof.

Claim 31 (Currently Amended): The fastening system pin of Claim 26 wherein the collars have about the same outside diameter and are swaged into the lock grooves of the pin with an installation tool having a swage anvil with a uniform swage cavity.

Claim 32 (Currently Amended): The fastening system pin of Claim 26 wherein the pin fastens workpieces at a thickness up to 1/8 of an inch.

Claim 33 (Currently amended): A fastening system for securing a plurality of workpieces together in a fastened joint in a plurality of applications having different load requirements, the fastening system comprising:

a first pin and a second pin;

each of the pins having an elongated shank and terminating at one end in an enlarged head and at its opposite end in a grooved portion comprising a plurality of circumferentially extending lock grooves and crests, the lock groove and crest geometry of the pins engaging a first collar or a second collar to fasten together the workpieces in three or more applications having different load requirements wherein the lock grooves of the first pin are of longest width required for the first collar of lower strength in a shear application and the lock grooves of the second pin are of the longest width required for the second collar of greater strength in a tension application, and the crests of the pins are of the longest width required for the second collar of greater strength in the tension application, wherein the first collar and the second collar are of different strengths and different materials, wherein the applications are selected from the group consisting of shear, shear/tension, tension, shear composite, shear/tensions composite and tensions composite applications, and wherein the lock grooves are defined by a root radius extending from a lowermost portion of the lock grooves vertically and the lock groove width extends horizontally across the lock grooves with the root radius equal to the lock groove width; and

Serial No. 10/753,000

PATENT
Docket No. 02-0611

wherein either the first collar or second collar can be attached to the first pin or the second pin.

Claim 34 (Currently Amended): The fastening system pin of Claim 33 wherein the first collar has a shear strength of about 64% of the shear strength of the second collar.

Claim 35 (Currently Amended): The fastening system pin of Claim 33 wherein the first collar is made of an aluminum ally and the second collar is made of titanium alloy.

Claim 36 (Currently Amended): The fastening system pin of Claim 33 wherein the lock grooves are overpacked in the range of 17% to 25%.

Claim 37 (Currently Amended): The fastening system pin of Claim 33 wherein the workpieces are made of metal composites or combinations thereof.

Claim 38 (Currently Amended): The fastening system pin of Claim 33 wherein the collars have about the same outside diameter and are swaged into the lock grooves of the pin with an installation tool having a swage anvil with a uniform swage cavity.

Claim 39 (Currently Amended): The fastening system pin of Claim 34 wherein the pin fastens workpieces at a thickness up to 1/8 of an inch.

Claim 40 (Currently amended): A fastening system for securing a plurality of workpieces together in a fastened joint in a plurality of application having different load requirements, the fastening system comprising:

a first pin and a second pin;

each of the pins having an elongated shank and terminating at one end in an enlarged head and at its opposite end in a grooved portion comprising a plurality of circumferentially extending lock grooves and crests, the lock groove and crest geometry of the pins engaging a first collar or a second collar to fasten together the workpieces in the plurality of applications having different load requirements wherein the lock grooves of the first pin are of

Serial No. 10/753,000

PATENT
Docket No. 02-0611

longest width required for the first collar of lower strength in a shear application, and the crests of the pins are of the longest width required for the second collar of greater strength in a tension application, wherein the first collar and the second collar are of different strengths and different materials, wherein the applications are selected from the group consisting of shear, shear/tension, tension, shear composite, shear tension composite and tension composite applications; and wherein either the first collar or second collar can be attached to the first pin or the second pin.

Claim 41 (Currently Amended): The fastening system pin of Claim 40 wherein the first collar has a shear strength of about 64% of the shear strength of the second collar.

Claim 42 (Currently Amended): The fastening system pin of Claim 40 wherein the first collar is made of an aluminum ally and the second collar is made of titanium alloy.

Claim 43 (Currently Amended): The fastening system pin of Claim 40 wherein the lock grooves are overpacked in the range of 17% to 25%.

Claim 44 (Currently Amended): The fastening system pin of Claim 40 wherein the workpieces are made of metal composites or combinations thereof.

Claim 45 (Currently Amended): The fastening system pin of Claim 40 wherein the collars have about the same outside diameter and are swaged into the lock grooves of the pin with an installation tool having a swage anvil with a uniform swage cavity.

Claim 46 (Currently Amended): The fastening system pin of Claim 40 wherein the pin fastens workpieces at a thickness up to 1/8 of an inch.